

Appl. No. : 09/389,720
Filed : September 3, 1999

AMENDMENTS TO THE SPECIFICATION

IN THE SPECIFICATION:

Please replace the paragraph beginning at page 6, line 15, with the following rewritten paragraph:

In one embodiment, the substrate film 18 (Figure 3) is fabricated from polymidepolyimide. Such substrate films 18 are commercially available from a wide variety of sources, for example, 3M, Casio, Shinko, Rite Flex and others. Typically, the fabrication of the film or tape 18 begins with providing a polymidepolyimide tape which is sandwiched on either side by a layer of copper and an outer layer of solder resist/mask. The desired electrical "artwork" is then etched on the polymidepolyimide tape. The skilled artisan will understand, however, that a variety of other non-conductive materials and processes can be used to create the substrate film 18.

Please replace the paragraph beginning at page 12, line 7, with the following rewritten paragraph:

In another embodiment, as shown in Figure 6, the substrate film carrier 20 is formed with the substrate film 18 to create the carrier-film assembly 21. In one embodiment, the carrier 20 and the film 18 are fabricated from polymidepolyimide. The skilled artisan will understand, however, that a variety of materials can be used for the carrier 20 and the film 18. Referring to Figure 6, the carrier 20 and the film 18 may be manufactured by using known techniques, such as molding.

Please replace the paragraph beginning at page 13, line 4, with the following rewritten paragraph:

In another embodiment, as shown in Figure 7, the substrate film carrier 20 comprises a plurality of layers 74 of material. In one embodiment, the layers 74 are polymidepolyimide. In other embodiments, one or more of the layers 74 are metallic, for example, copper, and/or solder mask. These latter embodiments may be desirable especially in the situation, as indicated above, in which fabrication of the electrical "artwork" on the substrate film 18 utilizes layers of copper and solder resist.

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Please replace the paragraph beginning at page 13, line 10, with the following rewritten paragraph:

For example, one or more layers 74 can be ~~polymide~~polyimide, one or more layers 74 can be copper, and one or more layers 74 can be solder mask. The thickness of each layer 74 can be controlled, as required or desired. Those skilled in the art will recognize that a number of materials may be used to fabricate the layered carrier 20 shown in Figure 7.

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AMENDMENTS TO THE CLAIMS

Claims 1-19 canceled.

20. (currently amended): An assembly, comprising:

a film including a plurality of substrate units with said plurality of substrate units being adapted to electrically interface interfaced with a plurality of dies, each one of said substrate units including a substantially central cavity adapted to receive wires from a corresponding die which connect to a first surface of said film, said dies being ~~attachable~~ attached to a second surface of said film with said second surface being opposed to said first surface; and

a carrier in mechanical communication with said first surface of said film for providing enhanced rigidity to said film by being sized and configured to add material at selected regions of said film.

21. (original): The assembly of Claim 20, wherein said plurality of substrate units are grouped into substrate sets.

22. (original): The assembly of Claim 21, wherein said substrate sets comprises three substrate units.

23. (original): The assembly of Claim 22, wherein said carrier further comprises a plurality of cross bars and wherein each cross bar is located near a substrate set.

24. (original): The assembly of Claim 20, wherein said plurality of dies comprise lead-over-chips (LOC).

25. (canceled)

26. (currently amended): The assembly of Claim 20, wherein said film comprises ~~polymide~~ polyimide.

27. (canceled)

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28. (canceled)

29. (original): The assembly of Claim 20, wherein each one of said plurality of substrate units includes a pair of adhesive tabs.

30. (original): The assembly of Claim 20, wherein each one of said plurality of substrate units includes a plurality of alignment holes.

Claims 31-58 canceled.

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REMARKS

This is responsive to the Examiner's Office Action mailed February 4, 2003. Applicant has hereby amended Claims 20 and 26. Claims 20-24, 26, 29 and 30 are currently pending in this application.

A summary document is included herein above with the status of all claims and the text of all pending claims. The specific changes to the amended claims are shown by ~~striketrough for any deletions~~ and underlining for any insertions.

SPECIFICATION

Applicant has amended the specification to bring it in compliance with the amendment to Claim 26. Specifically, "polymide" has been replaced with --polyimide--.

CLAIMS

Objections

The Examiner objected to Claim 26 and stated that there appeared to be a typographical error in the word "polymide".

As set forth in the response filed November 1, 2002, Applicant has noted that in the art different spellings are used for "polymide," for example, "polyimide." Thus, the skilled artisan would recognize that the word "polymide" encompasses all these spelling variations and modifications.

In this case, Applicant has amended Claim 26 to overcome the Examiner's objection. This amendment does not narrow the scope of the claim.

Rejections

The Examiner rejected Claims 20-24, 29 and 30 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,661,086 to Nakashima et al. (hereafter "Nakashima") and Claims 20-24 and 26 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,942,245 to Jackson et al. (hereafter "Jackson").

Applicant respectfully traverses these rejections and the Examiner's characterization of the cited references. In this case, Applicant has amended Claim 20 to more particularly define embodiments of the invention.

Independent Claim 20 is directed to an assembly and recites, among other things, that the substrate units are electrically interfaced with the dies, the carrier is in mechanical

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communication with the first surface of the film and the dies are attached to a second surface of the film with the second surface being opposed to the first surface. None of the cited references disclose, teach or suggest an assembly as set forth in Applicant's Claim 20.

Nakashima teaches a metal substrate (12 or 12') characterized by the Examiner as the "film". It is not clear to Applicant what the Examiner considers to be the "carrier", but it appears that the Examiner considers the circuit substrate (17) to be the carrier. In this case, the die (14 or 14') and the carrier (17) are connected to the same surface of the film (12 or 12'), that is, the lower surface in FIGS. 1 and 4. Thus, Nakashima cannot possibly anticipate Applicant's Claim 20.

Jackson teaches a polyimide film (11) and a metal sheet (12) characterized by the Examiner as the "carrier". As clearly shown in FIG. 3, the semiconductor device (20) as taught by Nakashima does not connect to any surface of the film (11), but instead connects to the carrier (12) which is connected to the film (11). Even if it is assumed that the device (20) connects to the surface of the film (11), it is clear from FIG. 3 that both the device (20) and carrier (12) would connect to the same surface of the film (11), that is, the upper surface in FIG. 3. Thus, Jackson cannot possibly anticipate Applicant's Claim 20.

Claims 21-24, 26, 29 and 30 depend from Claim 20, and each recites a unique combination of features not taught by the prior art. Therefore, Applicant submits that Claims 20-24, 26, 29 and 30 are in condition for allowance.

INFORMATION DISCLOSURE STATEMENT

Applicant is submitting herewith a Supplemental Information Disclosure Statement. The Examiner's consideration of this Information Disclosure Statement is respectfully requested.

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CONCLUSION

In view of the foregoing, the present application is believed to be in condition for allowance, and such allowance is respectfully requested. If further issues remain to be resolved, the Examiner is cordially invited to contact the undersigned such that any remaining issues may be promptly resolved. Also, please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 4/2/03

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